MVA jumpstart

Building a Private Cloud with Windows Server & System Center 2012 SP1 Jump Start

Microsoft

Pete Zerger | MVP, Consultant and Speaker
Symon Perriman | Microsoft Senior Technical Evangelist

Meet Symon | @SymonPerrimar

- Senior Technical Evangelist, Microsoft
  - Private Cloud, Virtualization & System Center
  - MCSE Private Cloud, Microsoft Certified Trainer (MCT) and VMware Certified Professional (VCP); several patents
- Recognized Industry Expert, Author & Speaker
  - Datacenter management, cloud, virtualization, high-availability, disaster recovery, mobile technologies and social media
  - Founder of Microsoft’s Failover Clustering & Network Load Balancing Blog

Pete Zerger | @pzerger

- Consultant & Community Leader
  - Seven-time Microsoft MVP
  - Managing Principal Consultant
  - Focusing on System Center management, private cloud and data center automation solutions
- Published Author & Speaker
  - System Center 2012 Operations Manager SP1 Unleashed
  - System Center 2012 Orchestrator SP1 Unleashed
- Event Speaker
  - MS Management Summit 2008 – 2013
  - MS TechEd NA & EMEA 2009, 2011, 2013
  - Microsoft TechReady 12 & 17

Goals

- Provide a “real world” perspective on Microsoft private and public
- Not only the “what”, but “why” and “how”
- Share tips, tricks and how-to
- Demo and speak to the common areas of confusion
- Help you find the path forward if your situation is not ideal

Setting Expectations

Audience

- IT Pros with a basic working knowledge of:
  - System Center 2012 (preferably SP1)
  - Windows Server 2012 Features and Functionality
  - Hyper-V (2.0 or 3.0)

Prerequisites

- **System Center 2012 SP1: Capabilities on MVA**
- **What's New in Windows Server 2012 on MVA**
- **Introduction to Hyper-V Jump Start on MVA**

Course Topics - Day 1

01 - Planning Your Cloud Implementation
02 - Building the Cloud Fabric
03 - Preparing for Self-Service
04 - Building Your Service Catalog

Course Topics - Day 2

01 - Monitoring, Management and Operations

02 - Connecting System Center to the Public Cloud

03 - Service Delivery and Automation in the Hybrid Cloud

04 - Reaching the Summit: ITIL-integrated Self-Service in the Hybrid Cloud

Register at

Schedule

- 9 – 10.35 – Session 1: Planning Your Cloud Implementation
- Break (10)
- 10.45 – 12.15 – Session 2: Building the Cloud Fabric
- Lunch (60)
- 1.15 – 2.50 – Session 3: Preparing for Self-Service
- Break (10)
- 3 – 4.30 – Session 4: Building Your Service

MVA

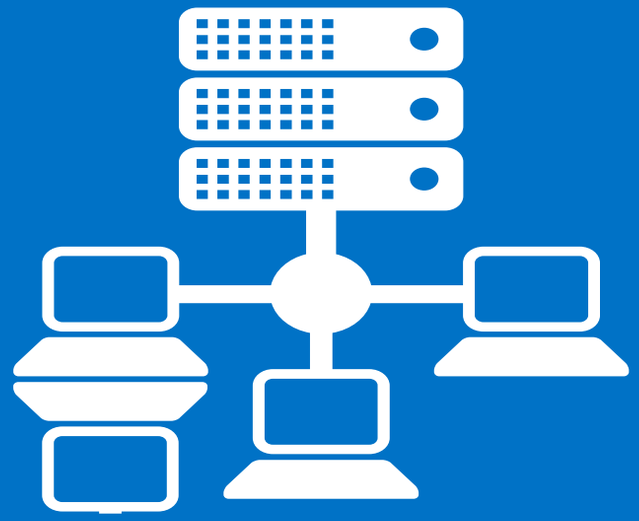
Join the MVA Community!

- Microsoft Virtual Academy
  - Free online learning tailored for IT Pros and Developers
  - Over 1.2M registered users
  - Up-to-date, relevant training on variety of Microsoft products
- “Earn while you learn!”
  - Get 50 MVA Points for this event!
  - Visit http://aka.ms/MVA-Voucher
  - Enter this code: **BuildPrivateCloud** (expires 7/19/2013)

MVA jumpstart

Day 1, Session 1

Planning Your Cloud Implementation



Session 1 Overview

- Audience and Functional Requirements
- Planning the Cloud Fabric
  - Classes of Service
  - Requirements for Multi-tenancy
  - Planning Your Cloud Infrastructure on Windows Server 2012
- Service Delivery and Automation

Audience and Functional Requirements

Audience and Functional Requirements

Questions

Before we design the fabric, we need to understand who and what we are designing for:

- Who is going to use this cloud?
- What services do they require?
- What are their service level expectations?
- What type of interfaces does the

Audience and Functional Requirements

Answers

What do the answers to these questions tell us?

- Availability and performance requirements for the cloud fabric
- Infrastructure sizing, performance and continual availability requirements
- The need for data security or isolation
- Services we should to develop in phase 1
- The appropriate user interface(s)

Additional Requirements for Multi-tenancy

Requirements may also signify the need for specific configuration in the fabric

- Controlled Resource Consumption
- Data Security
- Network Isolation

May drive the need for WS2012 & SC2012 SP1 Features like:

- System Resource Manager
- High Performance Networking and Storage Features of WS2012
- Network Virtualization (Software Defined Networking)
- Quality of Service

Classes of Service

- Defining need for features, performance, availability and capacity enables definition of *classes of service*
- Drive
  - Serv
  - Stor
  - Networking (physical and virtual)
  - Host and Host Clusters
  - Service, VM and other Templates
  - Service Catalog Design (presentation in the Self-Service Portal)

TIP: Less is More

Classes of service are a necessity to control scope of development effort, provide an intuitive user experience and avoid the "paradox of choice"

Real World
Recommendations

DO

Start by identifying “quick wins”

Plan the right approach for each type of user in your audience – one size does not fit all

Consider utilizing existing infrastructure for some workloads

DON’T

Focus only virtualization self-service – automation and self-service wins come in many forms!

Wait for Hyper-V 3.0 to get started!

Demo

A Look at the End Result (at the beginning)

Planning the Cloud Fabric

Hyper-V Scale Comparison

Massive Scale in the Box

	Windows Server 2008	Windows Server 2008 R2	Windows Server 2012
HW Logical Processor Support	16 LPs	64 LPs	320 LPs
Physical Memory Support	1 TB	1 TB	4 TB
Virtual Machine Processor Support	Up to 4 VPs	Up to 4 VPs	Up to 64 VPs
VM Memory	Up to 64 GB	Up to 64 GB	Up to 1 TB
Live Migration	Yes, one at a time	Yes, one at a time	Yes, with no limits. As many as hardware will allow.
Live Storage Migration	No. Quick Storage Migration via SCVMM	No. Quick Storage Migration via SCVMM	Yes, with no limits. As many as hardware will allow.
Servers in a Cluster	16	16	64
Cluster Scale	16 Nodes up to 1000 VMs	16 Nodes up to 1000 VMs	64 Nodes up to 8000 VMs

Storage and File System Enhancements

Enterprise-class features on less expensive hardware

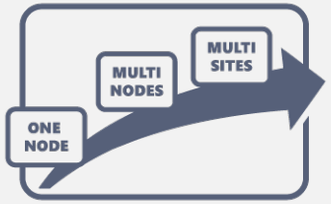
- Storage Spaces
- Application storage support through SMB 3.0
- Data Deduplication
- Server Message Block (SMB) Direct

Improved performance and more choice through industry innovation

- Offloaded Data Transfers (ODX)
- Virtual Fibre Channel for Hyper-V
- Windows Cluster in a Box
- Windows Storage Server

Continuous application availability

- File system enhancements
- SMB Transparent Failover
- Online backup
- Cluster-Aware Updating (CAU)
- SMB Multichannel
- High availability with iSCSI and NFS

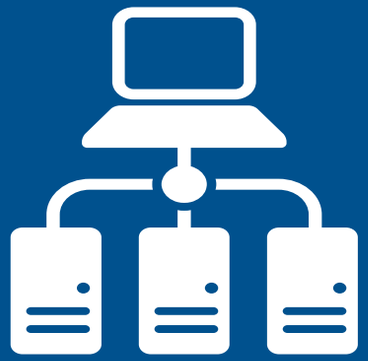


Simplified manageability

- Management options
- Unified storage management

Networking Enhancements

- NIC Teaming
- SMB Multichannel
- Hyper-V Network Virtualization
- PVLANs
- Remote Access network service
- SMB Direct (RDMA)
- IPAM
- Hyper-V Extensible Switch
- Live Migration Technologies



Design Considerations for the Infrastructure

1. Virtual machines (VMs)
2. VM hosts
3. Physical network
4. Physical storage

Environmental Constraints

- You will want to gather the following information about your environment before beginning your design:

- ✓ What physical constraints are there?
- ✓ Will existing hardware be used?
- ✓ What regulatory and/or compliance and/or privacy requirements exist?
- ✓ Do you have executive buy-in?
- ✓ Who will participate in your pilot?
- ✓ Does your IT group have the requisite knowledge?
- ✓ Do you have any corporate security policies?
- ✓ Do you have networking considerations?

Service Delivery and Automation

Services in VMM 2012 and SP1

Template

- Starting point for services and source of truth
- Specifies machine and connectivity requirements
- Deployed services (instances) are always linked to their templates
- Enables servicing of the instances

Instance

- Groups of machines that work together
- Includes machine definitions as well as applications
- Native application types:
  - Web Applications (WebDeploy) (2.0 and 3.0)
  - Virtual Applications (Server App-V) (RTM and SP1)
  - Database Applications (SQL DAC) (v1.1 and v3)

Service Templates

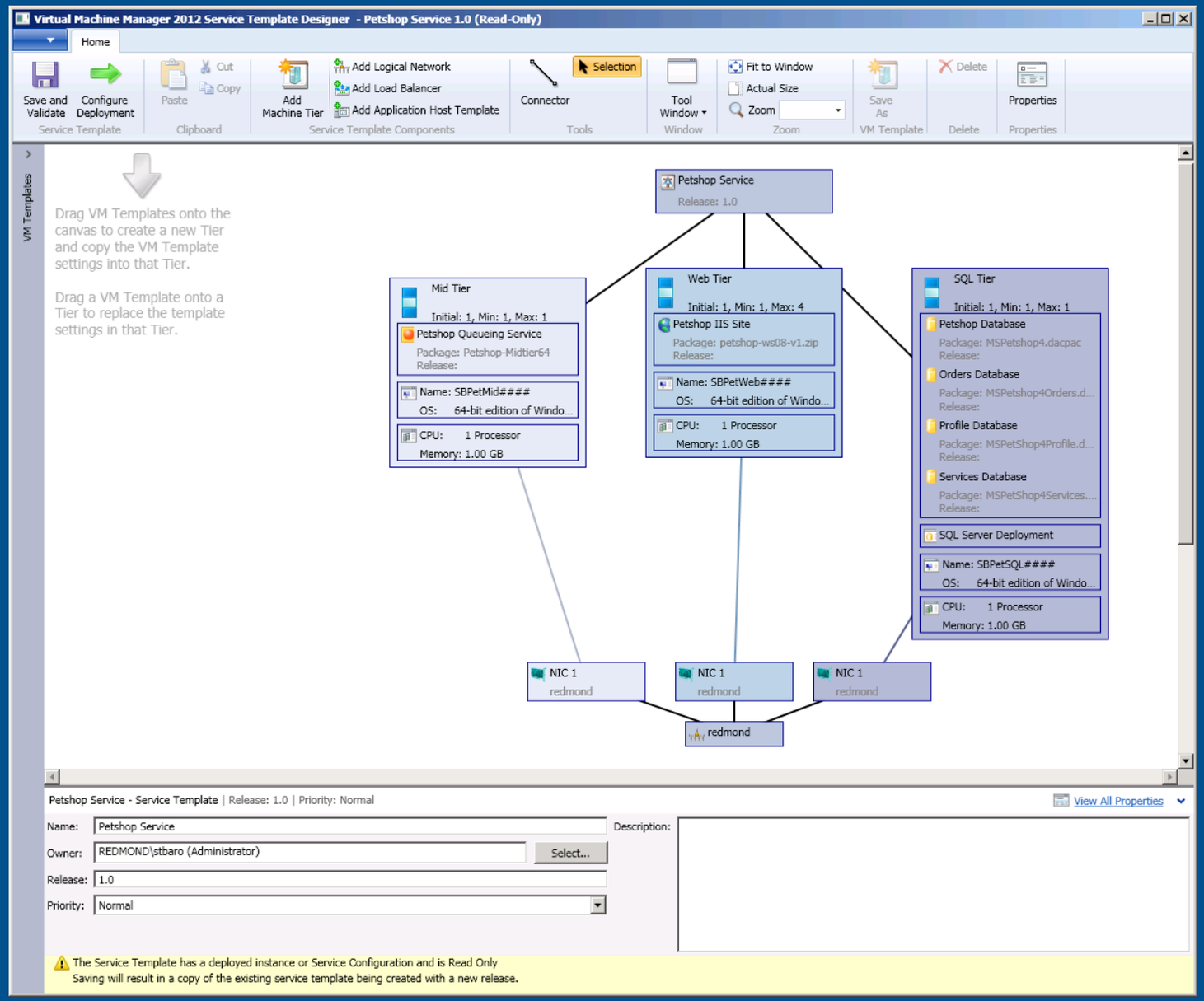
- Template is a starting point
  - Author the template in the new Service Designer
- Defines machines and their connectivity
  - Tiers, Hardware, Logical Networks, OS, Apps, Load Balancer templates etc.
- Deployed services are always linked to their templates
  - Enabling Quick Rollback, Monitoring for Shift-and-Drift
- Custom resources are used to deliver payload to a virtual machine
  - Add folder with .cr extension to VMM library
- Abstracts individual hosts, clusters and load balancers
  - Deployment controlled through network connectivity defined in

Service Designer

Ribbon

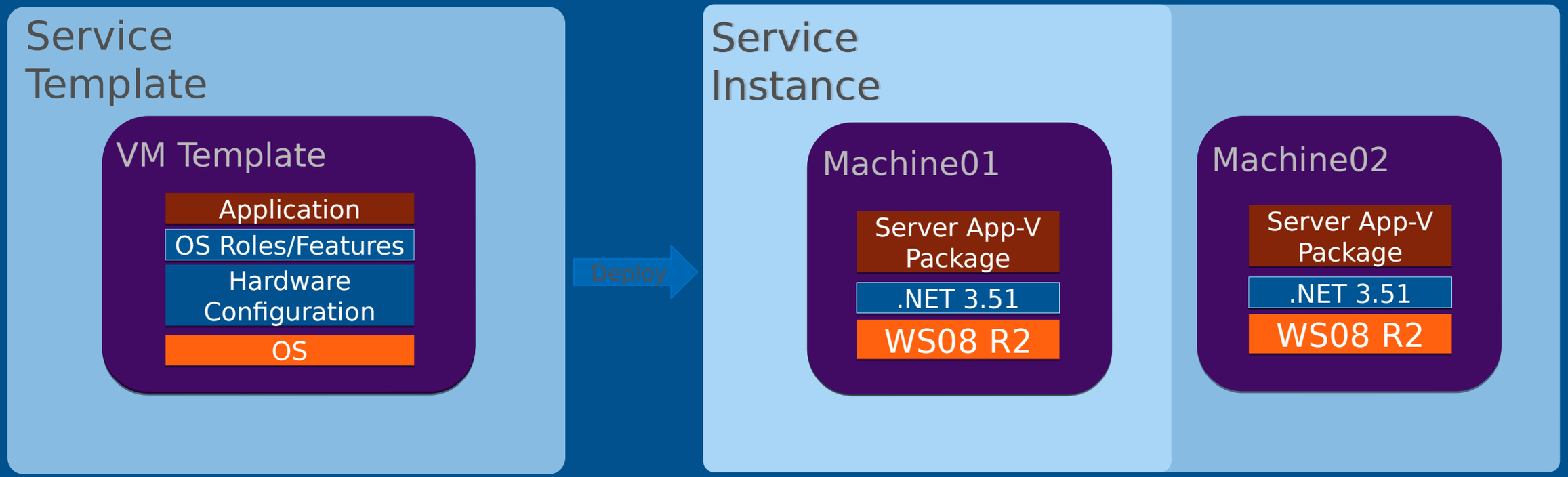
Designer canvas

Properties



Service Template and Instances

Single tier service

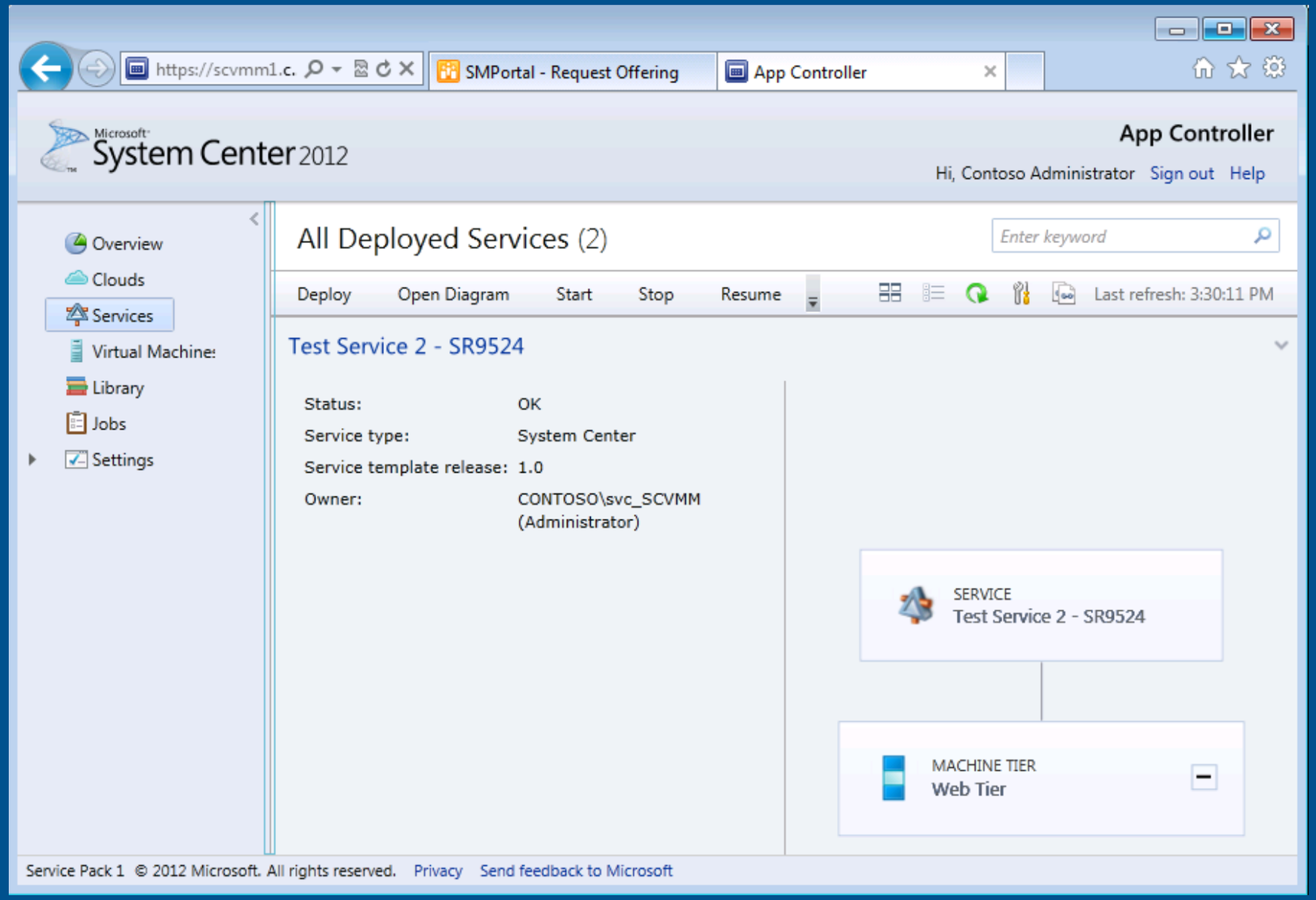


Demo

Working with Multi-Tier Services

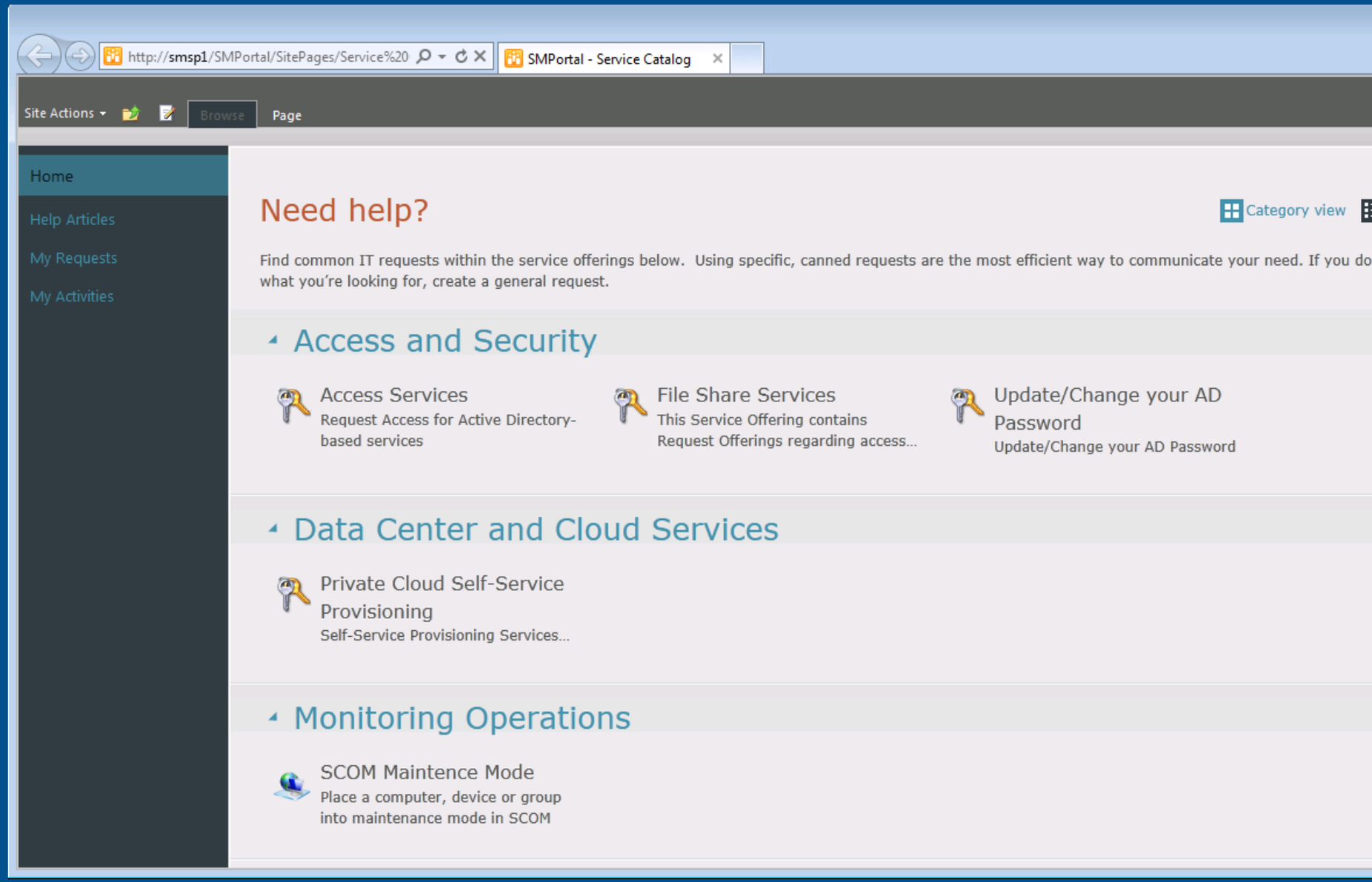
Self-Service via App Controller

- Quick to Install and Configure
- Near Instant Connectivity to Private and Public Cloud
- Appropriate for IT Pros and



Service Catalog (with SCSM)

- Highly Configurable
- Integrated Approval Workflow
- Appropriate for Less Technical Users



Module Summary

In this module, you learned about:

- Audience and Functional Requirements
- Planning the Cloud Fabric
  - Classes of Service
  - Requirements for Multi-tenancy
  - Planning Your Cloud Infrastructure on Windows Server 2012
- Service Delivery and Automation

Microsoft

©2013 Microsoft Corporation. All rights reserved. Microsoft, Windows, Office, Azure, System Center, Dynamics and other product names are or may be registered trademarks and/or trademarks in the U.S. and/or other countries. The information herein is for informational purposes only and represents the current view of Microsoft Corporation as of the date of this presentation. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information provided after the date of this presentation. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.